

Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

I. APPLICANT:

Company:

PCS Nitrogen Fertilizer LP
P.O. Box 307
Geismar, Louisiana 70734

Facility:

Geismar Agricultural Nitrogen & Phosphate Plant
Sulfuric Acid Plant
3115 Highway 30
Geismar, Louisiana 70734
Approximate UTM coordinates are 687.100 kilometers East and 3344.600 kilometers North,
Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

The sulfuric acid plant is a conventional contact, single absorption unit of Monsanto design that was built during the 1960's. The main reactor is equipped with natural gas combustors that are utilized to "Start-up" the reactor until the normal process is sustainable. Molten sulfur is atomized in a dry-air sulfur burner to produce SO₂. SO₂ is converted to SO₃ in a four-pass catalytic converter. The heat of oxidation is captured in two waste heat boilers and an economizer. The SO₃ stream is passed through and absorbed in 98% sulfuric acid in an absorbing tower to produce concentrated sulfuric acid product. Some of the SO₃ goes to an oleum tower. Vapors from the oleum tower are returned to the absorbing tower. There is only one vent stack from the sulfuric acid production unit, which is equipped with a mist eliminator that acts primarily as a process design to retain the sulfuric acid product and in a secondary function to minimize emissions.

PCS Nitrogen Fertilizer LP, Sulfuric Acid Plant at the Geismar Agricultural Nitrogen & Phosphate Plant, an existing fertilizer facility began operation in 1967 as Allied Chemical Corporation. Permit 924T was issued on May 18, 1978 to allow the installation of a 3,800 ton storage tank for 93% sulfuric acid. The sulfuric acid drying and absorption tower were replaced in kind by the original manufacturer in 1981 as an emission reduction project. An upgraded mist eliminator was installed to replace the existing mist eliminator. Permit 0180-

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

00046-01 was issued on November 17, 1990 authorizing the construction of a Chlorosulfonic Acid Plant. The permit was administratively amended on July 16, 1991. The permit number was later revised to Permit No. 2239. The PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant currently operates under Permit No. 2247, issued January 31, 1994. The current permit incorporated the Chlorosulfonic Acid Plant previously permitted under Permit No. 2239 and the previously grandfathered Sulfuric Acid Plant. The Chlorosulfonic Acid Plant was separated when Permit No. 2537 was issued on May 1, 1998 to the new owner Gabriel Chemicals, LLC. The Chlorosulfonic Acid Plant was issued Title V Permit No. 0180-00076-V0 on October 14, 2002 to Gabriel Chemicals, LLC when PCS Nitrogen became the operator of the Chlorosulfonic Acid Plant. A new cooling tower was authorized under Permit No. 2592 issued February 4, 1999.

PCS Nitrogen Fertilizer, LP, a subsidiary of Potash Corporation of Saskatchewan, Inc., is located on the Mississippi River in the Geismar area. About 450 acres of the 1,050-acre site has been developed. The remaining acreage is predominantly natural forest and contains some wetland.

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant - Geismar Agricultural Nitrogen & Phosphate Plant is a designated Part 70 source. Several Part 70 permits have been issued to the operating units within the complex. These include:

Permit No.	Unit or Source	Date Issued
2240-V2	Nitrate Group	06/07/04
2241-V0	Ammonia Plant Cogeneration Unit	07/30/99

The facility submitted timely applications for initial Part 70 permits for other units in the complex, which continue to operate under the state permits listed:

Permit No.	Unit or Source	Date Issued
2247	Sulfuric Acid Plant	01/31/94
2276 (M-1)	Phosphoric Acid Plant	04/28/95
2241 (M-1)	Ammonia Plant	09/26/94
2809	Ammonia Loading (small source permit)	05/30/02
2592	Sulfuric Acid Cooling Tower (small source permit)	02/04/99

In addition, PSD Permit PSD-LA-603, 01/27/97 and revised 03/18/04 and PSD Permit PSD-LA-617, 03/09/98 were also issued to the complex.

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Arcadian Fertilizer, L.P. on October 15, 1996 requesting a Part 70 operating permit. A permit reconciliation application was submitted on June 28, 2001. Additional information dated August 26, 2005, October 4, & 27, 2005 and December 16, 2005 was also received.

Project Description

PCS Nitrogen Fertilizer LP is not modifying the plant, but is incorporating the previously unpermitted auxiliary equipment that consists of molten sulfur storage tanks and pits, sulfuric acid and oleum storage tanks, a cooling tower, and ship, barge, rail car and truck loading facilities. The increase of sulfur dioxide and sulfuric acid emissions is almost totally due to a reconciliation of the emission rates, based upon the most current stack testing of the sulfuric acid production unit.

Permitted Air Emissions

Estimated changes in permitted emissions for the Sulfuric Acid Plant's Part 70 operating permit in tons per year are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM ₁₀	<0.01	5.89	+5.89
SO ₂	8970.6	10,157.38	+1,186.78
NO _x	55.01	65.96	+10.95
CO	0.05	3.65	+3.60
VOC	<0.01	0.90	+0.90
SO ₃ (Sulfur Trioxide)	<0.01	4.86	+4.86
HCl (Hydrochloric Acid)*	<0.01	-	-
CLSO ₂ OH (Chlorosulfonic Acid)	<0.01	-	-
H ₂ SO ₄ (Sulfuric Acid)*	<0.01	40.84	+40.84
Ammonia*	Not Reported	<0.01	-
Chlorine*	Not Reported	0.015	+0.015
Hydrogen Sulfide*	Not Reported	4.27	+4.27
Total Fluorides * (surrogate for Hydrogen Fluoride)	Not Reported	<0.01	-

Estimated permitted emissions from the Part 70 operating permits in tons per year for the entire complex are as follows:

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

<u>Pollutant</u>	<u>Facility Totals</u>
PM ₁₀	387.64
SO ₂	10,162.74
NO _x	2,890.81
CO	1,384.10
VOC	111.70

Regulatory Analysis

This permit was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations. Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) do not apply.

The facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51.

Louisiana Air Quality Regulations and NSPS

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or Table 2 of the draft Air Permit Briefing Sheet. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or explained in Table 2 of the draft Air Permit Briefing Sheet.

Currently New Source Performance Standards (NSPS), 40 CFR 60 Subpart H is not applicable to the sulfuric acid production line and does not apply to ancillary units such as storage tanks. The facility was built prior to the NSPS applicability date of August 17, 1971. The sulfuric acid drying and absorption tower were replaced in kind by the original manufacturer in 1981 as an emission reduction project. As part of that project an upgraded mist eliminator was installed to replace the existing mist eliminator.

The facility is permitted to produce and store Oleum that is a mixture of sulfuric acid and sulfur trioxide. The facility is therefore subject to LAC 33:III Chapter 59 Chemical Accident Prevention and Minimization of Consequences. 40 CFR 68 Chemical Accident Prevention Provisions is incorporated by reference in LAC 33:III Chapter 59.

Prevention of Significant Deterioration Applicability and NonAttainment New Source Review

The current facility meets the definition of a Major Stationary Source with respect to the Prevention of Significant Deterioration (PSD) regulations. However, the facility changes to the equipment or operation is less than the significant emission increase for each pollutant and therefore PSD and non-attainment new source review are not applicable.

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

MACT Requirements

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. A review of the current and proposed NESHAP regulations did not find any that are applicable to sulfuric acid production. Sulfuric Acid and Hydrogen Sulfide are Louisiana Class III TAPs and therefore Maximum Achievable Control Technology and the NESHAP regulations do not apply.

Air Modeling Analysis

Screening dispersion modeling indicated maximum ground level concentrations of SO₂ is below the preconstruction monitoring exemption levels and the National Ambient Air Quality Standards (NAAQS) ambient significance levels. Refined modeling based on emissions of 40.84 tons per year for H₂SO₄ emissions indicated maximum annual ambient concentrations are below the Louisiana Ambient Air Standards (AAS) beyond industrial property.

Dispersion Model(s) Used: ISCST3

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
SO ₂	Annual	13.83 µg/m ³	80 µg/m ³
SO ₂	24-hour avg.	250.72 µg/m ³	365 µg/m ³
SO ₂	3-hour avg.	737.48 µg/m ³	1300 µg/m ³
H ₂ SO ₄	8-hour avg.	16.9 µg/m ³	23.80 µg/m ³

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements.

For a list of approved General Condition XVII Activities, refer to Section VIII of the Air Permit Briefing Sheet from the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the Air Permit Briefing Sheet from the draft Part 70 permit.

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

IV. PERMIT SHIELDS

A permit shield was not requested.

V. PERIODIC MONITORING

Federal regulation 40 CFR 64 Compliance Assurance Monitoring (CAM) is applicable to this facility. Applicability for each pollutant, requires that the unit be subject to an emission limitation or standard and must use a control device to achieve compliance. The only pollutant that meets these requirements is the 4 lbs/ton of sulfuric acid production sulfur dioxide emission rate regulation from LAC 33:III.1503.A.

40 CFR 64.5 Deadlines for Submittals allows the facility to submit the Compliance Assurance Monitoring plan at the first renewal of the Part 70 Operating permit. Therefore, the facility does not need to comply with the CAM regulations until the first renewal.

VI. APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

ID No:	Requirement	Notes
		All applicable and exempt regulation requirements are clearly outlined in Section X and XI of the Air Permit Briefing Sheet from the draft Part 70 permit.

VII. STREAMLINED REQUIREMENTS

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
PCS Nitrogen, LP Sulfuric Acid Plant	None		

**PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0**

Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Sulfide (H₂S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants – Toxic air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

PCS Nitrogen Fertilizer LP – Sulfuric Acid Plant
Part 70 Operating Permit
PCS Nitrogen Fertilizer LP
Geismar, Ascension and Iberville Parishes, Louisiana
Agency Interest Number: 3732
Activity Number: PER19960002
Draft Permit 2247-V0

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO₂) – An oxide of sulphur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.